United States Department of Agriculture

Forest Service RO

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Reply To: 3420

Date: AUG 2 3 1989

Subject: Evaluation of Port-Orford-cedar mortality at two locations on the Happy Camp Ranger District(Report No. 89-12)

To: Forest Supervisor, Klamath National Forest

On August 2, 1989, Forest Pest Management received a Detection Report (No. 89-15) and samples from the Happy Camp Ranger District for determination of the presence of Phytophthora lateralis on Port-Orford-cedar at two locations on the district. Isolations from samples submitted were negative. On August 15, pathologist John Kliejunas examined the two sites with Bill Schoeppach from the district to verify the absence of the root disease and to determine the cause of the cedar mortality. Observations and discussion follow.

Site 1 (T17N, R6E, Sec. 26)

The area is near the upper portion of the Little South Fork of Indian Creek. Four to five pole-sized Port-Orford-cedar, adjacent to and downslope from a recently constructed forest road, were examined. The trees exhibited an uneven fading of the crowns, with chlorotic foliage intermixed with healthy green foliage. Symptoms were generally progressing from the top of the crown downward. Numerous Phloeosinus bark beetle attacks, as evidenced by galleries in the inner bark, exit holes and some pitch streaming, were associated with portions of the stems supporting chlorotic foliage. No evidence of Phytophthora-caused discoloration at root collars was observed. Discoloration that was present was associated only with insect galleries.

Symptoms suggest only bark beetle attack of the trees, possibly stressed from recent road building activities and reduced levels of soil moisture. Although Phloeosinus bark beetles may occasionally attack apparently healthy trees, they generally are found only on weakened or stressed trees. Crown symptoms were not typical of Phytophthora infection. If Phytophthora was present, girdling at the root collar would typically cause a distinctive, rapid fading and death of the entire crown, rather than an uneven discoloration of the foliage and thinning of the crown occurring over a period of several months.

Site 2 (T17N, R6E, Sec. 2)

Twelve to fifteen sawtimber-sized Port-Orford-cedar, up to 40 inches dbh, were recently dead or had uneven fading of the foliage, usually from the tops down. Two older dead Port-Orford-cedar were also present. Other sapling and

pole-sized Port-Orford-cedar in the immediate area appeared vigorous and healthy. Three dead pole to small sawtimber-sized Douglas-fir were present. The pocket of affected trees was adjacent to and downslope from a road constructed about 2 years ago. Numerous Phloeosinus galleries in the dead or dying cedar root collars and stems were present. Borer (Semanotus sp.) activity was evident in the dead cedar. Phytophthora-caused stain at root collars was not found.

Although the site did not appear especially dry, soil moisture deficit in combination with site disturbance is suspected as being responsible for attracting bark beetles and causing mortality. The suspicion of moisture deficit as a primary cause is supported by the presence of mature, overstory Douglas-fir with fading crowns, and pockets of dead pole and sawtimber-sized incense-cedar in the vicinity, and elsewhere, on the district.

The district should be commended for the prompt reporting of suspected locations of Port-Orford-cedar root disease. Early detection may allow limitation of its spread or possible eradication. Forest Pest Management encourages continued surveillance and reporting of suspected locations of Port-Orford-cedar root disease to the Regional Office at (415) 556-6520 or to the FPM northern California service area in Redding at (916) 246-5101.

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State and Private Forestry